REMARKS

I. Introduction

In response to the Office Action dated July 13, 2007, which was made final, and in conjunction with the Request for Continued Examination (RCE) submitted herewith, claims 1, 4, 6, 9, 11, 14, 16 and 19 have been amended. Claims 1-4, 6-9, 11-14 and 16-19 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Prior Art Rejections

In sections (2)-(3), the Office Action rejected claims 1, 3-4, 6, 8-9, 11, 13-14, 16 and 18-19 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 7,123,741 (Ono) in view of U.S. Publication No. 2003/0077002 (Silverstein). In section (4), the Office Action rejected claims 2, 7, 12 and 17 under 35 U.S.C. §103(a) as being unpatentable over Ono in view of Silverstein, and further in view of U.S. Patent No. 6,590,996 (Reed).

Applicants' attorney respectfully traverses these rejections in view of the amended claims.

Applicants' attorney submits that the Applicant's invention, as recited in independent claims 1, 6, 11 and 16, is patentable over the combination of references, because it contains limitations not taught by the combination of references. Specifically, Applicants' independent claims have been amended to now recite that each bit of the watermark is embedded into or extracted from a feature element of a band of circular rings generated from selected frequency bands of the computed magnitude domain of the Discrete Fourier Transform.

The Office Action, on the other hand, asserts the following:

> 3. Claims 1, 3-4, 6, 8-9, 11, 13-14, 16 and 18-1 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono (US 7,123,741 B2) in view of Silverstein et al. (US 2003/0077002 A1 hereinafter "Silverstein").
>
> As to claim 1, Ono teaches a method of embedding a watermark in digital data (process of embedding digital watermark; Col. 12, line 37), comprising, performing a Discrete Fourier Transform (DFT) on the digital data (applying DFT over the whole image, Col. 12, lines 58-67); computing a magnitude (amplitude) domain of the Discrete Fourier Transform (DFT is may be expressed using an amplitude component and a phase component; Col. 13, lines 17-21); embedding the watermark into selected frequency bands (the intermediate frequency domain is a target embedding area; Col. 2, lines 38-39) of the computed magnitude domain of the Discrete Fourier Transform, thereby creating a watermarked magnitude domain (Ono discloses that his invention embeds the watermark into the amplitude component and not the phase component; Col. 13, lines 45-51); and performing an inverse Discrete Fourier Transform on the watermarked magnitude domain to

reconstruct the digital data with the embedded watermark (the embedded watermark information is subjected to an inverse discrete Fourier transformation; Col. 14, lines 25-32).

Ono does not teach scaling the digital data to a standard size before computing the magnitude domain. Silverstein teaches scaling a larger image to a smaller image when transmitting from one display to another (Paragraph [0025]). Thus Silverstein's image scaling technique reads on the claimed scaling of digital data. Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to have combined the DFT watermarking system of Ono with the scaling method of Silverstein in order to provide the user with a readable image on a screen (Silverstein [0025]).

In addition, the Office Action states the following:

As to claim 3, Ono teaches wherein the selected frequency bands comprise one or more middle frequency bands (the intermediate frequency domain is a target embedding area; Col. 4, lines 10-11).

As to claim 4, Ono teaches wherein the middle frequency bands comprise a band of circular rings of the magnitude domain (Fig. 4 shows circular ring frequency distribution of an amplitude component obtained after a DFT, where the intermediate frequency is clearly shown).

Applicants' attorney disagrees with this analysis.

At the indicated locations, the cited Ono and Silverstein references merely describe the following:

<u>Ono: Col. 12, line 37</u>
B-1. Process of Embedding Digital Watermark

<u>Ono: Col. 12, lines 58-76</u>
The process then makes the whole color-converted original color image data G.sub.cmyk subjected to discrete Fourier transform (DFT) as an orthogonal transformation and gains DFT coefficients F.sub.cmyk as frequency components (transform coefficients).

The prior art technique divides an image into multiple blocks and applies the DFT in each block. Like the first embodiment, the technique of this embodiment, on the other hand, applies the DFT over the whole image without dividing the image into multiple blocks.

<u>Ono: Col. 13, lines 17-21</u>
Unlike the DCT, the DFT is expressed by a function of complex variable. There are two expression methods: expression by a real number component and an imaginary number component and expression by an amplitude component and a phase component.

Ono: Col. 2, lines 38-39

In this application, the intermediate frequency domain is a target embedding area.

Ono: Col. 13, lines 45-51

The procedure of this embodiment accordingly does not embed the watermark information in the phase component, but embeds the watermark information in the amplitude component. In the discussion hereafter, the DFT components (DFT coefficients) thus represent the amplitude component.

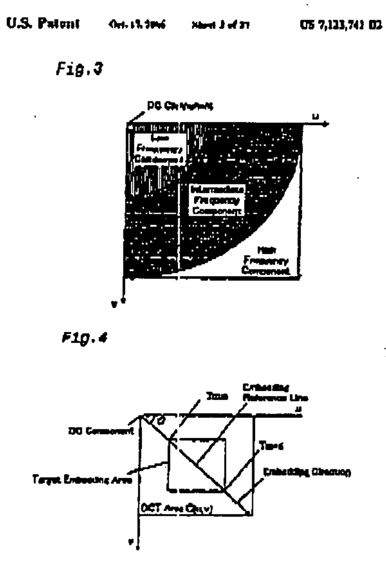
Ono: Col. 14, lines 25-32

Referring back to FIG. 14, the process makes resulting DFT coefficients F'.sub.cmyk with the embedded watermark information s subjected to inverse discrete Fourier transform (IDFT) to generate embedding-processed color image data G'.sub.cmyk. The process then carries out color conversion of the color image data G'.sub.cmyk from the CMYK color system into the RGB color system to obtain embedding-processed color image data G'.sub.rgb.

Ono: Col. 4, lines 10-11

In this application, the intermediate frequency domain is a target embedding area.

Ono: Fig. 4 (actually Fig. 3)



Silverstein: Paragraph [0025]

[0025] In general, the system and method of the present invention is a technique of transmitting an image adapted to a first display area size, such as a standard computer screen having a particular pixel-by-pixel resolution, to an

apparatus having a smaller display area size by scaling the image in the spatial domain by means of coefficient cropping in the frequency domain. When the cropped coefficients are used to display an image within the second smaller display area, a scaled version of the image is displayed. In a specific embodiment, frequency domain coefficients are cropped such that a region of interest of the image is scaled down less than the remainder of the image when displayed in the second smaller display area. Scaling in this manner provides the user with a readable region of interest and with the remainder of the image scaled down so as to facilitate easy image navigation by the user. Furthermore the system and method is a technique of transmitting image data to the apparatus in a bandwidth efficient manner such that only a required subset of the coefficient data is transmitted and combined with previously transmitted coefficient data when the region of interest is changed.

As noted above, Applicants' claims have been amended to recite that each bit of the watermark is embedded into or extracted from a feature element of a band of circular rings generated from selected frequency bands of the computed magnitude domain of the Discrete Fourier Transform.

Ono, on the other hand, embeds the watermark in the Discrete Fourier Transform coefficients, as described above. Consequently, Ono modifies the Discrete Fourier Transform coefficients directly.

Moreover, Silverstein merely scaling an image for display in a smaller display area size. However, Silverstein does not teach scaling digital data prior to performing a Discrete Fourier Transform, in order to embed or extract a watermark. Also, as admitted by the Office Action, Ono does not disclose scaling digital data to a standardized size before embedding a watermark.

Applicants' attorney also asserts that Silverstein cannot be combined with Ono except via hindsight. One of ordinary skill in the art would not consider Silverstein's scaling of data for display as a reasonable precursor to Ono's embedding of a watermark. Applicants' invention, on the other hand, scales an image to a standard size to avoid inverse scaling in the Fourier domain.

Consequently, because of the differences, the combination of Ono and Silverstein fail to disclose all the limitations of Applicants' independent claims.

Reed fails to overcome the deficiencies of Ono and Silverstein. Recall that Reed was cited only against claims 2, 7, 12 and 17, and only for showing a watermark being embedded either in an RGB or YUV data stream.

Thus, Applicants' attorney submits that independent claims 1, 6, 11 and 16 are allowable over references. Further, dependent claims 2-4, 7-9, 12-14 and 17-19 are submitted to be allowable over the references in the same manner, because they are dependent on independent claims 1, 6, 11

and 16, respectively, and thus contain all the limitations of the independent claims. Moreover, dependent claims 2-4, 7-9, 12-14 and 17-19 recite limitations not taught or suggested by the references.

III. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited.

Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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